

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application:

LISTING OF CLAIMS:

1. (Original) A circuit board module, comprising:
  - a circuit board having surface mount pads;
  - a circuit board component mounted to the circuit board; and
  - a heat sink assembly including:
    - a heat sink,
    - a first clip holder and a second clip holder, each clip holder being mounted to respective surface mount pads of the circuit board using a surface mount technology soldering process, and
    - a clip having a first portion configured to fasten to the first clip holder, a second portion configured to fasten to the second clip holder, and a third portion coupled to the first and second portions, the third portion being configured to position the heat sink adjacent the circuit board component when the first and second portions are respectively fastened to the first and second clip holders.

Claim 2 (Canceled).

3. (Original) A heat sink assembly, comprising:
  - a heat sink;
  - a first clip holder and a second clip holder, each clip holder being configured to mount to surface mount pads of a circuit board using a surface mount technology soldering process; and

a clip having a first portion configured to fasten to the first clip holder, a second portion configured to fasten to the second clip holder, and a third portion coupled to the first and second portions, the third portion being configured to position the heat sink adjacent a circuit board component on the circuit board when the first and second clip holders are mounted to the surface mount pads of the circuit board and when the first and second portions are respectively fastened to the first and second clip holders.

Claims 4-6 (Canceled).

7. (Currently amended) The heat sink assembly of claim 3 wherein:

each clip holder is elongated in shape and includes (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end; and

the surface mount contacts of each clip holder define a plane which is substantially parallel to the circuit board when that clip holder mounts to the surface mount pads of the circuit board, and wherein the surface mount contacts of each clip holder further define apertures which are substantially perpendicular to the plane; and

each clip holder further includes a non-conductive body portion interconnected between the first and second surface mount contacts of that clip holder, the non-conductive body portion defining a surface to interface with automated pick and place equipment; and

~~The heat sink assembly of claim 6 wherein the non-conductive body portion of each clip holder defines a cavity for fastening with the clip, the cavity extending in a direction that is substantially parallel to the plane.~~

8. (Original) The heat sink assembly of claim 7 wherein each clip holder further includes:

an interconnecting conductive portion which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed within the cavity defined by the non-conductive body portion of that clip holder.

Claims 9-12 (Canceled).

13. (Original) A method for installing a heat sink, the method comprising:
  - disposing the heat sink over a circuit board component mounted to a circuit board;
  - fastening a first end of a clip to a first clip holder which is surface mounted to surface mount pads of the circuit board using a surface mount technology soldering process; and
  - fastening a second end of the clip to a second clip holder which is surface mounted to other surface mount pads of the circuit board using the surface mount technology soldering process, the clip positioning the heat sink adjacent the circuit board component when the first and second ends of the clip are fastened to the first and second clip holders which are surface mounted to the surface mount pads of the circuit board.
14. (Original) The method of claim 13 wherein the second clip holder defines a cavity which extends in a direction that is substantially parallel to a plane of the circuit board; wherein the method further comprises:
  - after the first end of the clip is fastened to the first clip holder, bending the clip to align the second end of the clip with the cavity defined by the second clip holder.
15. (Original) The method of claim 13, further comprising:

mounting the first and second clip holders to the surface mount pads of the circuit board using the surface mount technology soldering process.

16. (Original) The method of claim 15 wherein mounting includes:
- disposing the first and second clip holders over the surface mount pads of the circuit board and in contact with printed solder paste using automated pick and place equipment; and
  - applying heat to melt the printed solder paste, activate flux within the printed solder paste and percolate gas through apertures defined by the first and second clip holders.
17. (Original) A heat sink assembly, comprising:
- a heat sink;
  - surface mounting means for surface mounting to surface mount pads of a circuit board using a surface mount technology soldering process; and
  - a clip having a first portion configured to fasten to the surface mounting means, a second portion configured to fasten to the surface mounting means, and a third portion coupled to the first and second portions, the third portion being configured to position the heat sink adjacent a circuit board component on the circuit board when the surface mounting means mounts to the surface mount pads of the circuit board and when the first and second portions are fastened to the surface mounting means.

Claim 18 (Canceled).

19. (Currently amended) The heat sink assembly of claim 17 wherein the surface mounting means includes:

a set of clip holders, each clip holder being elongated in shape and including (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end, each surface mount contact including means for percolating gas therethrough;  
~~The heat sink assembly of claim 18 wherein each clip holder further includes:~~

interfacing means for interfacing with automated pick and place equipment.

20. (Currently amended) The heat sink assembly of claim 17 wherein the surface mounting means includes:

a set of clip holders, each clip holder being elongated in shape and including (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end, each surface mount contact including means for percolating gas therethrough;  
~~The heat sink assembly of claim 18 wherein each clip holder further includes:~~

means for electrically connecting the clip to the first and second surface mount contacts of that clip holder.

21. (Currently amended) The circuit board module of claim 1 wherein each clip holder is elongated in shape and includes (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end, and wherein the surface mount contacts of each clip holder define apertures which are substantially perpendicular to a plane of the circuit board; and

~~The circuit board module of claim 2 wherein each clip holder further includes:~~

a non-conductive body portion interconnected between the first and second surface mount contacts of that clip holder, the non-conductive

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body portion defining a surface to interface with automated pick and place equipment; and

wherein the non-conductive body portion of each clip holder defines a cavity for fastening with the clip, the cavity extending in a direction that is substantially parallel to the plane.

22. (Previously Presented) The circuit board module of claim 21 wherein each clip holder further includes:

an interconnecting conductive portion which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed within the cavity defined by the non-conductive body portion of that clip holder.

Claim 23 (Canceled).

24. (Previously Presented) The method of claim 13 wherein each clip holder includes:

a first surface mount contact configured to mount to surface mount pads of the circuit board using a surface mount technology soldering process, the first surface mount contact being disposed at a first end of the clip holder;

a second surface mount contact configured to mount to other surface mount pads of the circuit board using the surface mount technology soldering process, the second surface mount contact being disposed at a second end of the clip holder which is opposite the first end; and

a body portion interconnected between the first surface mount contact and the second surface mount contact, the body portion being configured to fasten with the clip;

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wherein the clip holder is elongated in shape and includes (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end;

wherein the surface mount contacts of the clip holder define a plane which is substantially parallel to the circuit board when that clip holder mounts to the surface mount pads of the circuit board, and wherein the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane;

wherein the clip holder further comprises:

a non-conductive body portion interconnected between the first and second surface mount contacts of the clip holder, the non-conductive body portion defining a surface to interface with automated pick and place equipment; and

wherein the non-conductive body portion of the clip holder defines a cavity for fastening with the clip, the cavity extending in a direction that is substantially parallel to the plane.

25. (Previously Presented) The method of claim 24 wherein each clip holder further includes:

an interconnecting conductive portion which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed within the cavity defined by the non-conductive body portion of that clip holder.

26. (Previously Presented) The heat sink assembly of claim 17 wherein the surface mounting means includes a set of clip holders, each clip holder including:

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a first surface mount contact configured to mount to surface mount pads of the circuit board using a surface mount technology soldering process, the first surface mount contact being disposed at a first end of the clip holder;

a second surface mount contact configured to mount to other surface mount pads of the circuit board using the surface mount technology soldering process, the second surface mount contact being disposed at a second end of the clip holder which is opposite the first end; and

a body portion interconnected between the first surface mount contact and the second surface mount contact, the body portion being configured to fasten with the clip;

wherein the clip holder is elongated in shape and includes (i) a first surface mount contact at a first end and (ii) a second surface mount contact at a second end opposite the first end;

wherein the surface mount contacts of the clip holder define a plane which is substantially parallel to the circuit board when that clip holder mounts to the surface mount pads of the circuit board, and wherein the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane;

wherein the clip holder further comprises:

a non-conductive body portion interconnected between the first and second surface mount contacts of the clip holder, the non-conductive body portion defining a surface to interface with automated pick and place equipment; and

wherein the non-conductive body portion of the clip holder defines a cavity for fastening with the clip, the cavity extending in a direction that is substantially parallel to the plane.



27. (Previously Presented) The heat sink assembly of claim 26 wherein each clip holder further includes:
- an interconnecting conductive portion which electrically interconnects the first and second surface mount contacts of that clip holder, and wherein part of the interconnecting conductive portion is exposed within the cavity defined by the non-conductive body portion of that clip holder.
28. (New) The circuit board module of claim 1 wherein each clip holder defines a cavity which is substantially cylindrical in shape;
- wherein the first portion of the clip defines a first tab;
  - wherein the second portion of the clip defines a second tab;
  - wherein each of the first and second tabs has a substantially cylindrical shape; and
- wherein the third portion of the clip is configured to provide spring tension which simultaneously holds (a) the first tab in an inserted position within the cavity defined by the first clip holder and (b) the second tab in an inserted position within the cavity defined by the second clip holder, when the clip holders are mounted to the respective surface mount pads of the circuit board using surface mount technology and when the third portion of the clip positions the heat sink adjacent the circuit board component.
29. (New) The heat sink assembly of claim 3 wherein each clip holder defines a cavity which is substantially cylindrical in shape;
- wherein the first portion of the clip defines a first tab;
  - wherein the second portion of the clip defines a second tab;
  - wherein each of the first and second tabs has a substantially cylindrical shape; and

wherein the third portion of the clip is configured to provide spring tension which simultaneously holds (a) the first tab in an inserted position within the cavity defined by the first clip holder and (b) the second tab in an inserted position within the cavity defined by the second clip holder, when the clip holders are mounted to the respective surface mount pads of the circuit board using surface mount technology and when the third portion of the clip positions the heat sink adjacent the circuit board component.

30. (New) The method of claim 13 wherein each clip holder defines a cavity which is substantially cylindrical in shape;

wherein the first end of the clip defines a first tab;

wherein the second end of the clip defines a second tab;

wherein each of the first and second tabs has a substantially cylindrical shape; and

wherein the remainder of the clip is configured to provide spring tension which simultaneously holds (a) the first tab in an inserted position within the cavity defined by the first clip holder and (b) the second tab in an inserted position within the cavity defined by the second clip holder, when the clip holders are mounted to the respective surface mount pads of the circuit board using surface mount technology and when the clip positions the heat sink adjacent the circuit board component.

31. (New) The circuit board module of claim 28 wherein at least a portion of each clip holder extends beyond an edge of the circuit board component;

wherein the first clip holder and the second clip holder reside adjacent opposite corners of the circuit board component; and

wherein the cavities defined by the first and second clip holders are configured to respectively receive the first and second tabs when the first tab moves in a first direction along a first axis and the second tab moves

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in a second direction along a second axis, the first and second axes being substantially parallel to each other and the circuit board, and the first and second directions being substantially opposite each other.

32. (New) The heat sink assembly of claim 29 wherein at least a portion of each clip holder extends beyond an edge of the circuit board component;  
wherein the first clip holder and the second clip holder reside adjacent opposite corners of the circuit board component; and  
wherein the cavities defined by the first and second clip holders are configured to respectively receive the first and second tabs when the first tab moves in a first direction along a first axis and the second tab moves in a second direction along a second axis, the first and second axes being substantially parallel to each other and the circuit board, and the first and second directions being substantially opposite each other.
33. (New) The method of claim 30 wherein at least a portion of each clip holder extends beyond an edge of the circuit board component;  
wherein the first clip holder and the second clip holder reside adjacent opposite corners of the circuit board component; and  
wherein the cavities defined by the first and second clip holders are configured to respectively receive the first and second tabs when the first tab moves in a first direction along a first axis and the second tab moves in a second direction along a second axis, the first and second axes being substantially parallel to each other and the circuit board, and the first and second directions being substantially opposite each other..